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(71) Applicant:  
Buil, Jürgen, 4190 Kleve, Germany

(72) Inventor:  
Buil, Jürgen Heinrich; Buil, Wolfgang Werner,  
4190 Kleve, Germany

(19) Detector for heat sources with an acoustic reporting

Until now fires, people and other heat sources in smoke filled rooms could be detected and located only through relatively expensive bulky infra-red cameras. The acoustically reporting detector is cost-effective in the production, lightweight, manageable, easy to operate and does not require cooling.

An infra-red sensitive pyroelectric sensor registers the heat radiation, which emanates from people or fires, in the range of 6.5 – 15 µm wavelength.

After an appropriate amplification follows a transformation in tones, which for instance can be heard through a headphone and depending on the heat intensity its frequency can be changed.

The sensitivity is adjustable, depending on the ambient air temperature, so that an area with the highest temperature in a room can be ascertained.

The detector enables the fire fighter to locate the fire source or to find people approaching a smoke filled area, even while wearing cumbersome breathing protection.

It is also possible to locate fires behind obstructions or in cable ducts, as well as to isolate heat losses in buildings by this means.

# OS 37 21 414

## 1 Claim

Detector for heat sources, which reacts to people, smoldering fires, fires and similar heat sources in smoke filled or fumigated rooms, as well as to temperature differences in buildings or parts of buildings (heat losses), is characterized by the following: the existing heat source is indicated through an acoustic signal and its direction can be determined.

## Description

The invention pertains to an infra-red detector with an adjustable sensitivity under the preamble of Claim 1.

Despite the lack or absence of visibility, with help of the infra-red detector with the acoustic reporting it should be possible to find people to rescue and/or to locate a smoldering fire and fight it well directed in case of fires, during which occurs a strong fumigation of an object.

The locating of people or fires by the means of an acoustic reporting is not well known. Indeed it is possible to find people or fires using infra-red sensitive cameras, but the disadvantage of that is that there are very cost-intensive, relatively bulky and heavy, as well as require cooling.

The invention underlies the task to make available a low cost, small-sized, manageable and easy to operate device for finding people and fires despite the limited visibility in case of a hostile fire, when fumigation occurs, as well as for fighting fires well directed and effective, for example in order to prevent a substantial water damage.

According to the invention, the task is solved by the following: infra-red heat radiation emitted by people or fires is registered by a pyroelectric sensor in the range of 6.5 – 15  $\mu\text{m}$  wavelength, processed by an amplifier and then is transformed into an acoustic signal, which changes its frequency.

The cooling is not required, because the sensor only reacts to the heat differences. The device can be adjusted to the various ambient air temperatures, so that the hottest area would always be detected.

Such a device could be carried along on fire-fighting vehicles and be used immediately under cumbersome breathing protection.

The further utilization is the detecting of fires behind obstructions or in cable ducts, as well as heat losses and temperature differences in buildings.

The advantages of this heat detector are the low production costs, the simple operation, as well as small size and adjustability to the various ambient air temperatures.

In the drawing the exemplary embodiment of the subject of invention is presented as a longitudinal cut, as well as a block diagram. There are shown

Fig. 1 longitudinal cut;

Fig. 2 block diagram.

It means in Fig. 1

A housing

B infra-red sensitive sensor

## 2

C switch  
D connection for speaker / headphone  
E regulator for sensitivity

In Fig. 2

S sensor  
V amplifier  
T tone converter / tone generator  
L speaker

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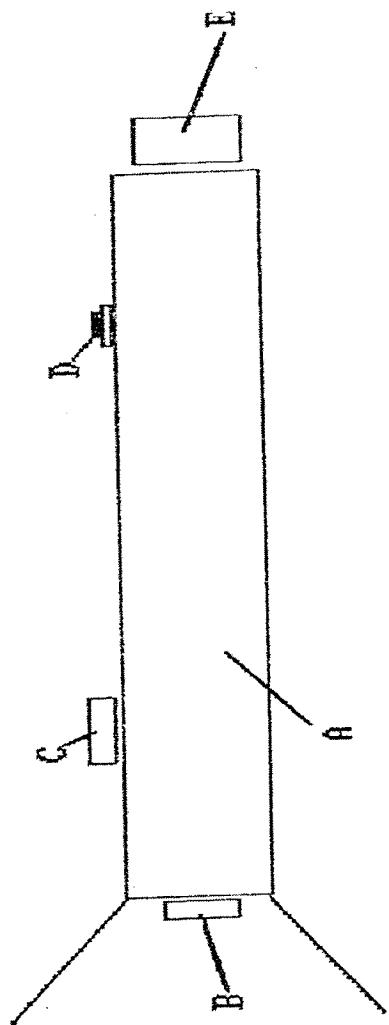


Fig.1

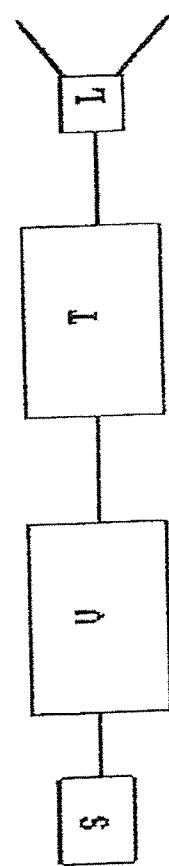


Fig.2

U = 9-12 V